

In the Specification:

Change the title to read “A METHOD FOR ALIGNING SUBSTRATES IN A TRAY”.

Page 5, amend the paragraph from lines 3 to 14 to read as follows:

Referring now to Figure 1a, a diagram provides a top-down view of a substrate tray 100. The substrate tray 100, in some packaging applications, ~~the substrate tray is~~ referred to as a Jedec tray, is used to hold a number of singulated units 110 (substrates that have been cut from a silicon wafer). Alternatively, the singulated units 110 may be complete integrated circuit units wherein the unit comprising a plurality of dies that were cut from silicon wafers and the unit is ready for functional and error testing once electrical connectivity is made. The tray 100 holds the singulated units 110 in a neat and orderly fashion to facilitate easy and accurate handling. To facilitate precise placement of the singulated units 110, the tray 100 may feature properly sized indentations, ridges, or bumps (not shown) for use in aligning the singulated units 110.

Amend the paragraph on page 7, lines 1 to 7 to read as follows:

For packaging operations where precision is a necessity, the position of the singulated units 110 within the tray 100 is crucial. Due to the indentations, ridges, or bumps used for aligning the singulated units 110 within the tray 100, occasionally, some singulated units 110 are placed in the tray in such a way that they are ~~do~~ not seated properly within the indentations, ridges, or bumps. When this occurs, the singulated units 110 can lie at an angle with respect to the tray 100.

Amend the paragraph on page 7, lines 14 to 21 to read as follows:

After the singulated units are in place in the trays, a lifting unit is used to pick up the singulated units from the tray and move them to a position for a packaging operation to take place. The lifting unit is sometimes referred to as a back-up unit and uses vacuum to lift up the singulated units from the tray. In a flip chip packaging process, an example of the use of the back-up unit is when the singulated units are lifted from the trays by the back-up unit, flipped so that a side that was formerly resting on the bottom of the tray is now facing upwards, and solder bumps are applied to pads on the substrate.

Amend the paragraph on page 8, lines 9 to 17 to read as follows:

With the vacuum applied and the singulated units 110 ~~are~~ attached to the individual vacuum pads 220 of the lifter unit 210, the lifter unit 210 begins to travel in an upward motion to lift the singulated units 110 out of the tray 100. In some packaging operations, the lifter unit 210 also incorporates other functionality, such as flipping the singulated units 110 as well. Unfortunately, some of the singulated units 110, the ones that were not laying flat on the tray 100, were not lifted by the lifter unit 210. This may have been due to an improper vacuum pressure being made with the individual vacuum pads 220 that are a direct result of the singulated units 110 not lying flat on the tray 100.

Amend the paragraph bridging pages 9 and 10 to read as follows:

Referring now to Figures 3a-d, diagrams illustrate an apparatus for eliminating the problem of singulated units not resting flat on the tray according to a preferred embodiment of the present invention. Rather than attempting to pick up the singulated units 110 from the tray 300 with the lifter unit 210 while the singulated units 110 are

lying directly upon the tray 300, in a preferred embodiment of the present invention, a back-up plate 310 with a plurality of protrusions 320 protruding from one surface of the back-up plate 310 moves in an upward direction from beneath the tray 300. The back-up plate 310 is driven by a pneumatic actuator (not shown) that moves the plate in an up and down motion. According to another preferred embodiment of the present invention, the back-up plate 310 may be driven by a hydraulic actuator rather than a pneumatic actuator. Accordingly, the tray 300 necessarily has a series of holes in its bottom to mate with the protrusions 320 from the back-up plate 310. The holes should be sufficiently small so that the singulated units 110 do not fall through. The back-up plate 310 is preferably fabricated from a metallic material, such as aluminum or steel, to provide thermal stability and good strength. However, other materials which are capable of withstanding a high temperature processes and possible ~~possibly~~ exposure to caustic chemicals, such as carbon fiber, are usable.

Amend the paragraph on page 11, lines 7 to 12 to read as follows:

Referring now to Figure 4, a diagram provides a plan view of the tray 100 and the back-up plate 310 with the protrusions according to a preferred embodiment of the present invention. The plan view illustrates the tray 100 with depressions 310 ~~300~~ with the holes in the depression ~~its~~ bottom to match the protrusions 320 from the back-up plate 310. Once again, any depressions, ridges, or bumps present at the bottom of the tray 300 are not displayed.